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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/665,036 | 09/19/2000 | Nebojsa Ilic | 13297/00002 | 5475 |

7590 12/02/2002

MARSHALL, O'TOOLE, GERSTEIN, MURRAY & BORUN
6300 SEARS TOWER
233 SOUTH WACKER DRIVE
CHICAGO, IL 60606-6402

| EXAMINER | |
|---|---|
| PATTEN, PATRICIA A | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1654 | 17 |

DATE MAILED: 12/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

| Application No. | Applicant(s) |
|---|---|
| 09/665,036 | Ilic et al. |
| **Examiner** | **Art Unit** |
| Patricia Patten | 1651 |

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) X Responsive to communication(s) filed on *Sep 9, 2002*.

2a) X This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

**Disposition of Claims**

4) X Claim(s) *1-23, 25-35, and 37-39* is/are pending in the application.

4a) Of the above, claim(s) *1-4 and 11-18* is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) X Claim(s) *5-10, 19-23, 25-35, and 37-39* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

| | | | |
|---|---|---|---|
| 1) | Notice of References Cited (PTO-892) | 4) | Interview Summary (PTO-413) Paper No(s). |
| 2) | Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) | Notice of Informal Patent Application (PTO-152) |
| 3) X | Information Disclosure Statement(s) (PTO-1449) Paper No(s). 14 | 6) | Other: |

## DETAILED ACTION

Claims 1-23, 25-35 and 37-39 remain pending in the application.

Claims 1-4 and 11-18 were withdrawn from consideration without traverse in Paper No. 5.

Claims 5-10, 19-23, 25-35 and 37-39 were presented for examination on the merits.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### *Claim Rejections - 35 USC § 112*

Claims 5-10, 19-24 and 32-39 are rejected under 35 U.S.C. 112, first paragraph, for the reasons set forth in the previous Office Action because the specification, while being enabling for a method for extracting the crude epicuticular layer of plants or plant parts via exposure to a solvent (and the corresponding crude product obtained therefrom), wherein said exposure does not cause damage to layers under the epidermal layer of the plants or plant parts, does not reasonably provide enablement for an antiviral substance purified from any of the plants as

indicated in Claim 5 for example. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

Applicants' arguments were fully considered but not found persuasive.

Applicants first argue that they have "demonstrated how to make such preparations possessing antiviral activity by exposing a ***specified*** plant or plant part to a solvent under conditions sufficient to solubilize materials in the cuticular and epicuticular layers of the plant..." (emphasis added) (p.4, 2nd full paragraph - Arguments). As it was stated in the previous Office Action, the state of the art regarding anti-viral treatments is unpredictable. Applicants assert that ***specified*** plants (or plant parts) (as listed in Claim 5) may be treated to remove the epicuticular layers, via separation from the rest of the plant/fruit/vegetable, to obtain an 'anti-viral' substance, however, Applicants broadly taught in Example 1 that "Samples were prepared by dipping intact plant parts 3-5 minutes in dicholoromethane....', and then stated that "The study indicated several samples...(pear)....(apple)....(grape)...(tomato)...produced 50% inhibition." (P.16 Instant specification). Applicants are claiming a method for preparation of an anti-viral substance from any of the Genus of plants as listed in Claim 5, however, have not provided any indication that any plant other than pear, apple, grape and tomato would actually possess any anti-viral activity. Although pear plants, apple plants, grape plants and tomato plants may

possess some anti-viral activity, what specific part of the plants were *actually extracted* to obtain the anti-viral activity? Are these extracts from the leaves, stems or fruit? Consequently, Applicants have not taught which part of the pear, apple, grape or tomato plants were actually solvated to produce the substance which was anti-viral toward HSV-1. Thus, Applicants' have taught that certain plants possess some anti-viral activity, but have not clearly shown what parts of these plants were actually extracted to obtain an anti-viral substance.

In the Instant case, the claims are drawn to a method for producing a preparation possessing antiviral activity from a plant or plant part from numerous plant Genus which consequently contain numerous plant species. The Citrus Genus for example is a large genus of fruit producing plant species such as *C.hystrix, C.medica, C.maxima, C.aurntium, C.reticulata, C.grandis, C.decumana, C.nobilis, C.paradisi, and C.limonthe*. All of these plants contains multiple plant parts such as stems, leaves, fruits, roots and seeds. The other Genus listed in claim 5 contain multitudes of species of plants. Specification does not contain any working examples which would demonstrate how to obtain an anti-viral substance from the epicuticular layers of any plant, but simply teaches a method for dissolving the epicuticular layer away from a plant material. As the state of the art stands, substances obtained specifically from the epicuticular layers of plant material which displayed anti-viral could not be found. Thus, it appears that these substances are rare. Considering the rarity of substances extracted from the epicuticular layers of plants which have been shown to display anti-viral activity, coupled with the lack of guidance within the Instant specification with regard to exactly what plant parts were used to extract a

product which possessed anti-viral activity toward HSV-1, the Skilled artisan would need to set forth an undue amount of experimentation, involving rigorous trial and error protocols in order to ascertain exactly what plant parts, when exposed to solvent, will yield a product with anti-HSV-1 activity. Because of the unpredictability of the art as well as the breadth of the claims, the artisan would perform this experimentation unduly without a reasonable expectation of success.

Applicants contend that they have "....discovered that antiviral preparations may be prepared from the cuticular and epicuticular layers of specific plants and plant parts" (p. 7, 1st full paragraph -Arguments). Although there is some indication in the Instant specification that apple, avocado, cabbage, grape and tomato produced some inhibition towards HSV-1, Applicants did not disclose what parts of the plants actually produced this 'anti-viral substance' (*supra*). According to the data presented on p.16 of the Instant specification, there were two samples of apple, 61 and 64 which showed markedly different inhibitory activities toward HSV-1. Thus, the methods set forth in the Instant specification is evidence that the extracts of apple plant (61 and 64) although not known what part of the plants were actually solvated were indeed different with regard to anti-HSV-1 activity.

Accordingly, the Examiner indicated in the previous Office Action that medicinal efficacy of plants are unpredictable, even from plant part to plant part . Applicants argued that the Examiner's position with regard to the unpredictability of inherent phytochemicals/medicinal qualities pertaining to different parts of the plant were unsubstantiated (p. 5, 2nd full paragraph - Arguments). It is well known in the herbal art that respective plant parts provide for markedly

different inherent phytochemicals which in turn lead to distinct medicinal qualities. Brown (1985) taught that:

"Not only does each plant have individual qualities, but each phase of growth and part is different in the plant itself. For instance, the strawberry can be used as a food, tea, catalyst, or medication. Strawberries used only for medicinal applications can be harvested at various stages of its existence and external conditions; with each stage and condition, its medicinal value will change. ***Its dried leaves will be good for one thing, its green leaves are good for another. The medicinal values of the leaves are different than those of the flowers. There is also a variation of medicinal value within the stems, the young leaves, the seeds and even within the plants that grow in different soils***. Young plants are different than young leaves, flowering plants are different than nonflowering, and leaves collected on a damp, misty morning are different than those collected on a warm sunny afternoon. Though slight, these differences are very important. Once again, experience and experimentation are the only teachers" (emphasis added)(p.28).

Herein is clear evidence that the medicinal qualities of plant parts, even within the same species of plant, possess respective medicinal qualities. Moreover, it is clear that the Instant specification also shows that extracts from different plant parts such as apple possess varying degrees of medicinal properties (*supra*). Thus, the medicinal properties from each respective part of the plant can only be evaluated by experimentation.

The Examiner agrees that she has acknowledged that Applicants have found some type of antiviral substance in grape, tomato, avocado, cabbage and apple plants (per Arguments on p.7, part IV), but have not provided the skilled artisan with enough guidance in order to reproduce

such a method without undue experimentation because the Instant specification does not clearly set forth what plant parts are being dissolved in solvents in order to achieve a product which possesses such anti-viral activity toward HSV-1.

Applicants contend that the method for making the anti-viral substance would merely involve screening the products for medicinal efficacy, which would not involve undue experimentation (p.6, lines 1-6). This 'make and test' position is inconsistent with the decisions in *In re Fisher*, 427 F.2d 833, 166 USPQ 18 (CCPA 1970), *Amgen v. Chugai Pharmaceuticals Co. Ltd.*, 13 USPQ2d, 1737 (1990), and *In re Wands*, 8 USPQ2d, 1400 (CAFC 1988). *In re Wands* stated that the factors to be considered in determining whether a disclosure would require undue experimentation include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art and, (8) the breadth of the claims.

All of these factors were addressed in the initial rejection. Breadth alone is not the issue, however. *In re Fisher*, 427 F.2d 833, 166 USPQ 18 (CCPA 1970), held that

> "Inventor should be allowed to dominate future patentable inventions of others where those inventions were based in some way on his teachings, since such improvements while unobvious from his teachings, are still within his contribution, since improvement was made possible by his work; however, he must not be permitted to achieve this dominance by claims which are insufficiently supported and, hence, not in compliance with

first paragraph of 35 U.S.C. 112; that paragraph requires that scope of claims must bear a reasonable correlation to scope of enablement provided by specification to persons of ordinary skill in the art; in cases involving predictable factors, such as mechanical or electrical elements, a single embodiment provides broad enablement in the sense that, once imagined, other embodiments can be made without difficulty and their performance characteristics predicted by resort to known scientific law; in cases involving unpredictable factors, such as most chemical reactions and physiological activity, scope of enablement varies inversely with degree of unpredictability of factors involved."

The Specification fails to provide a ***full, clear and exact*** description of the claimed method for producing an anti-viral substance from plants or parts thereof. The skilled artisan would not be able to practice the invention as claimed, given the limited and incomplete description set forth in the Specification.

Claims 25-31 remain rejected under 35 U.S.C. 112 first paragraph as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which in pertains or with which it is most clearly connected, to make and/or use the invention for the reasons set forth in the Office Action dated 5/7/02.

The Specification has not set forth the guidance to permit the skilled artisan to reproduce the method for extracting anti-viral substances from the epicuticular layer of the

plants (*supra*). Applicants further have not demonstrated that the antiviral substance that they were in possession of had any in-vivo activity toward HSV-1, nor that it had any activity at all toward other viruses such as HIV or measles virus for example. The state of the art is a priori unpredictable. Applicants have broadly claimed that the substances, provide for these effects, but have not provided any evidence to substantiate that the products would have any effect on any virus *in-vivo*.

***Claim Rejections - 35 USC § 102***

Claims 5-9, 10, 19, 21, 32, 33, 37 and 39 remain rejected under 35 U.S.C. 102(b) as being anticipated by Nordby et al. (1991).

Applicants' arguments were fully taken into account, but were not found convincing.

Applicants' principal argument is that because Nordby et al. did not disclose an anti-viral product obtained from the removal of grapefruit fruit wax, that the reference does not anticipate the claimed invention. However, the product **must** be the same if the steps for preparing are the same:

"Where the claimed and prior art products are identical or substantially identical in structure or composition, or are **produced by identical or substantially identical processes**, a *prima facie* case of either anticipation or obviousness has been established." *In re Best*, 195 USPQ 430, 433 (CCPA 1977).

Further, the claims are drawn to a process; i.e., they are method claims. The recitation of 'for producing a preparation possessing antiviral activity comprising substances obtained from cuticular or epicuticular layers external to an epidermis of a plant or plant part' is considered an intended use of the method and does not hold much patentable weight. The reason this preamble does not hold much patentable weight is because it does not materially change the method. Because Nordby et al. disclosed the method for solvating the waxy layer of grapefruit peels via the same method as instantly claimed, the methods are anticipated. Thus, the Examiner is not basing the premise for the rejection on inherency.

Thus, although the *intent* of the claimed invention may differ from the teachings of Nordby et al., the methods as instantly claimed were already known in the art and therefore anticipated. Nordby et al. performed the same method as is instantly claimed, which must have resulted in the same end product.

***Claim Rejections - 35 USC § 103***

Claims 5-10, 19-23, 32-35 and 37-39 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Nordby et al. (1991) for the reasons set forth in the Office Action dated 5/7/02. Claim 5 has been amended to recite wherein the plants are selected from different Genus of plants.

Applicants' arguments were fully considered, but not found persuasive.

Applicants' principal argument resides in the contention that because Nordby et al. did not disclose wherein the waxy layer of grapefruit possessed anti-viral properties. Again, the intended use of the method, in this case, to produce an anti-viral substance, is considered an intended use of the method which does not change the method. Because the method for removing the waxy layer of grapefruit was known, the ordinary artisan would have been motivated to remove waxy layers of other plants/plant parts in order to evaluate the waxy layer for phytochemicals/medicinal properties as discussed in the Office Action dated 5/7/02.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention.

Therefore, the invention as a whole was *prima facie* obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

No Claims are allowed.

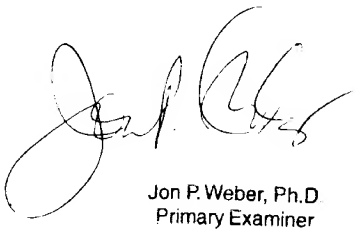
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Patricia Patten, whose telephone number is (703)308-1189. The examiner can normally be reached on M-F from 9am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Brenda Brumback is on 703-306-3220 The fax phone number for the organization where this application or proceeding is assigned is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.



Jon P. Weber, Ph.D
Primary Examiner